

mice and the cats and the vicissitudes of the climate, it seems remarkable that such a percentage of good seed should ever be obtained.

What seedsmen mean by the "genuineness" is another matter, but one of extreme importance. It would be quite impossible even for an expert to recognise seed of a particular stock or breed, say of broccoli or turnip. There are good stocks and bad "stocks" of these, but they cannot be distinguished by their seeds. A mere seed-testing station, private or official, could render no assistance in such cases. The only way to test the genuineness of a stock is to grow it and watch it throughout the season. Obviously the purchaser could not wait for that, he must trust to the good faith and reputation of the seedsman.

Considering, then, the vast scale on which seed-testing and seed-trials are now made by the leading firms and the limited scale on which seeds can be tested at a seed-testing station, and, further, bearing in mind that the ordinary seed-trials give no indication of "genuineness," we do not see that the farmer for his immediate practical purposes would be materially benefited by a seed-testing station. It would answer his purpose very much better to devote a little care to testing the seeds for himself from a sample procured some weeks before he required to sow for a crop. The seedsman, in his turn, should give a guarantee that the bulk should be equal, or closely approximate, to the sample. We say closely approximate because so numerous and so varied are the vicissitudes to which the seed is, or may be, exposed that some latitude, say to 5 or even 10 per cent., would only be reasonable.

Farmers in general sow much too thickly, so that a lower percentage than is theoretically desirable might well be condoned in practice if the seed were good of its kind.

While saying so much we are far from wishing to undervalue the importance of research-stations wherein the phenomena of germination as well as other physiological and pathological processes might be studied from the point of view of research. Associated with a small trial-ground, such stations would be very valuable for the investigation of the properties and mode of life, not only of old well-known crops, but also of new introductions. It is just here that the value of the "crank of a scientific man" would show itself. One of the witnesses objected to placing such a man at the head of a Government seed-testing station because "they get so infallible and then they take notions in their heads."

It is as well to see ourselves as others see us. We should have thought infallibility in this connection was a sign of nescience rather than of science.

MAXWELL T. MASTERS.

THE MARINE RESOURCES OF THE BRITISH WEST INDIES.

THE above is the title of a paper by Dr. J. E. Duerden, which, with a series of appendices, has lately been issued as an extra number of the *West Indian Bulletin*—the official journal of the Imperial Agricultural Department of the West Indies. As read, it formed the leading feature of a recent Congress at Barbados, held under the auspices of the aforementioned Department, at which representatives of all the West Indian Islands were present, and it sets forth in a concise and connected form the essence of all that has transpired in the utilisation for economic purposes of the rich resources of the West Indian seas. In the first part of the paper the fisheries of Jamaica, the Barbados, Bahamas, Leeward Islands, Trinidad, St. Vincent, British Guiana and Honduras are each dealt with in turn, mainly from the statistical standpoint; and then, in descending zoological order, there are treated the principal marine resources

from the Mammals to the Sponges. The history of a movement of recent years to establish in the West Indies a marine biological station is next fully sketched, and its defence strengthened by a plea based on a comparison of the work achieved by institutions of the desired order existing elsewhere.

The paper shows that, in their utilisation, the marine resources of the West Indian Islands have long played a too limited part in the maintenance of the Colony itself, and that they fall short through being nowhere under the control of an organised plan. The yearly value of the fish caught is estimated at 30,000*l.*, against that of fish imported at 147,000*l.*, which is thus nearly five times the greater, while attention is directed to a diminution in the supply of the West Indian turtle and a decadence in more especially the "sea egg" industry, due to the effects of over-fishing and lack of scientific treatment, and, in the case of the turtle, due also to the "ceaseless capture of adults." Dr. Duerden, in discussing the remedies for these shortcomings, shows conclusively that they lie in a restocking process to be based on a practical knowledge of the life-history of the species rather than the establishment of closed seasons. Perusal of his paper shows that the importance of these two industries to the traders and inhabitants of the islands is so great that, under the present circumstances, immediate action should be instituted on their behalf.

Concerning the question of fish-capture, Dr. Duerden refers at some length to an unsuccessful attempt made in 1898 to gauge the trawling capacity of certain of the West Indian seas. He gives in full a copy of the log of the vessel employed, and in discussing the alleged failure he expresses the conviction that the venture (which was a private one) was too early suspended, and shows reason to conclude that the further introduction of northern methods without reference to tropical conditions is not likely to be successful. Claiming satisfaction for line-fishing at 200 fathoms, he is led to advocate the stake-net method lately introduced from America as specially fitted for use in bays and lagoons, if not among the coral reefs themselves. His paper shows that he has thoroughly mastered all branches of his subject, and proves beyond previous experience that the West Indian seas contain a rich fauna, which, systematically handled on scientific lines, ought materially to increase the resources of the islands, and thereby to aid in raising them from their present unsatisfactory condition.

Dr. Duerden institutes comparisons between the results obtained at the West Indies and those begotten of trained supervision and the establishment of a fisheries bureau, with its necessary plant and equipment, at the Cape and elsewhere, and he with much naïvety dwells upon the facts as calculated to affect, by competition, the Sponge industry of the Bahamas, financially the most important industry the Colony can boast. He points with justifiable emphasis to the need in the West Indies of a fisheries establishment, regarding it as a pressing necessity to enable the colonists to keep pace with the times and fully to maintain their position in competition and advancement beside the rest of the world.

Conspicuous among the marine biological establishments to which he points as exemplary, are those which have arisen in relation to the agricultural departments of localities at which they are placed; and the suggestion arises that a similar extension should be granted the Agricultural Department of the West Indies, now wholly botanical. Of the success which has attended the work in economic botany which Dr. D. Morris, the indefatigable director of this Department, has achieved in the short period which has elapsed since its foundation, our readers are aware; and we are informed by a local authority that he is eminently desirous of the extension of his sphere of influence in the direction of economic zoology. In Dr. Duerden he has at hand the one man

who, by training and experience, is most familiar with the neighbouring West Indian seas and all that pertains to fisheries work upon them. Perusal of Dr. Duerden's paper is convincing as to the urgency of this matter, and we consider that the Government and those in charge of the Agricultural Department of the West Indies would be well advised did they provide, properly equipped, a laboratory of which he should be put in charge. To do so would be but to give the Department equal chances with others under Imperial control, to which it is closely akin.

Concerning the economic zoology of the West Indian seas then, everything tends to show that at the present time circumstances so combine that it may be said all is ripe for the initiation of a new departure, under which systematic work and organisation, guided by the light of science, may be profitably brought to bear. The local Press are advocating this course, and the special publication of Dr. Duerden's paper is the expression on the part of those best competent to judge of its desirability. Given this, and the scientific knowledge of the movements and life-histories of the denizens of the seas which would thus be obtainable, the hatcheries, curing-houses, wharves and trading-fleet would follow in due course; and it is certain that a moderate amount of assistance bestowed in the direction we have indicated might be the means of placing the depressed colonies in an improved position, and of thereby lessening their constantly-recurring charge upon the mother country.

THE LATE MR. SEEBOHM'S TRAVELS IN ARCTIC EUROPE AND ASIA.¹

THE two well-known volumes, respectively entitled "Siberia in Europe" and "Siberia in Asia," in which Mr. Seebohm described his bird-nesting expeditions to the Petchora (1875) and Yenesei (1877) valleys, having long been out of print, the author determined to combine (and to some extent condense) the two narratives, and to issue them in single volume form. The greater portion of this task had been accomplished when it was unhappily brought to an abrupt close by the untimely death of the talented author. Its completion was thus of necessity left to another hand. Although the editor has not thought fit to make his identity known to the public, he may be congratulated on the tact and skill with which he has carried out his share of the work.

In one respect, and one respect only, are we disposed to find fault with the editor; and this in regard to the title chosen for the volume. In this respect, indeed, both author and editor are singularly unfortunate. "Siberia in Europe," the title of the first volume of the original work, is a geographical absurdity, and "Birds of Siberia" is but little, if at all, better. For, in the first place, at least half of the tract of country through which the author travelled has not the faintest shadow of a claim to be termed "Siberia," and, secondly, birds form by no means the sole topic on which the author discourses. "Egg-hunting in high latitudes," or some such title, would, we think, have been a far preferable designation.

Since Mr. Seebohm's account of his journey along the Yenesei was reviewed at considerable length in these columns when the original work was published, a very brief notice will suffice on the present occasion. The author's main object was to obtain nests, eggs and young of birds whose breeding habits were previously almost or entirely unknown; and his success in discovering the breeding places of the grey plover, little stint and other kinds of his favourite "Charadriidæ" are now matters of history. Migration was also a favourite subject of study and speculation on the part of

Mr. Seebohm; and although we may be unable to assent to all his views and opinions with regard to this phenomenon, his account (p. 203) of the rush of migrating birds on Heligoland must remain fresh and interesting for all time.

"From the darkness in the east," he writes, "clouds of birds were continually emerging in an uninterrupted stream; a few swerved from their course, fluttered for a moment as if dazzled by the light, and then gradually vanished with the rest in the western gloom. . . I should be afraid to hazard a guess as to the hundreds of thousands that must have passed in a couple of hours . . . The scene from the balcony of the lighthouse was equally interesting; in every direction birds were flying like a swarm of bees, and every few seconds one flew against the glass."

And Mr. Seebohm is equally happy when describing the habits of the birds and their young on the tundra, which formed the main object of his expeditions. The most striking illustrations in the book are undoubtedly those of the nest and young of the grey plover and little stint, but as these appeared in NATURE on a former occasion they are not repeated here, and we prefer to



FIG. 1.—A group of willow-grouse. (From "The Birds of Siberia.")

give, as an example of Mr. Whympers's illustrations, the exquisite cut of willow-grouse which stands at the head of chapter xii.

But, as we have already indicated, Mr. Seebohm by no means confined his attention to birds, and his notes on the Samoyedes of the Petchora should form interesting reading to all students of anthropology, while his observations on reindeer can scarcely fail to attract all those who make a special study of the deer tribe. The sportsman, too, will find much interesting matter in many of Mr. Seebohm's pages.

Our opinion of the manner in which the editor has carried out his task has been already expressed; but we think he would have been wiser had he cut out the penultimate paragraph of the last chapter, which contains certain very unnecessary reflections on the mode of zoological work in vogue in this country.

As an interesting and well-written account of two adventurous journeys through little-known mosquito-haunted regions, the work should attract a large circle of readers.

R. L.

¹ "The Birds of Siberia; a Record of a Naturalist's Visit to the Valleys of the Petchora and Yenesei." By Henry Seebohm. Pp. xix + 512. Illustrated. (London: Murray, 1901). Price 12s. net.